AMENDMENTS TO THE CLAIMS

1. (Canceled)

2. (Currently Amended) The process according to claim 18, ~~1, characterized in that said azides of Group I elements are~~ wherein the mineralizer is LiN_3, NaN_3, KN_3, CsN_3 or ~~their~~ mixtures thereof.

3. (Canceled)

4. (Currently Amended) The process according to claim 18, ~~1, characterized in that the reduction of the~~ wherein a saturation degree of the supercritical solution with respect to soluble gallium compounds is ~~obtained~~ controlled by adjusting [[the]] an opening of ~~the crucibles~~ a crucible containing the metallic gallium feedstock[[,]] placed in the dissolution zone.

5. (Currently Amended) The process according to claim 18, ~~1, characterized in that the~~ wherein a temperature ramping in the dissolution zone ~~at the beginning of~~ to begin the ~~first step~~ forming of the polycrystalline gallium-containing nitride feedstock is higher than 0.1°C/min, and ~~then the~~ a temperature ~~in the first step~~ in the dissolution zone is subsequently maintained higher than 350°C during the forming of the polycrystalline gallium-containing nitride feedstock ~~, preferably higher than 400°C~~.

6. (Currently Amended) The process according to claim 18, ~~1, characterized in that~~ wherein the temperature in the dissolution zone is maintained higher than the temperature in the crystallization zone ~~in the first step~~ during the forming of the polycrystalline gallium-containing feedstock, and ~~in the second step~~ the temperature in the crystallization zone is raised to a higher value than the temperature in the dissolution zone during the crystallizing of the gallium-containing nitride.

7. (Currently Amended) The process according to claim 18, ~~1, characterized in that the~~ wherein a temperature ramping in the crystallization zone ~~at the beginning of~~ to begin the ~~second~~

~~step~~ crystallizing of the gallium-containing nitride enables a ~~certain~~ dissolution of the ~~seed(s)~~ at least one seed.

8-9. (Canceled)

10. (Currently Amended) The process according to claim [[1]] 19, ~~characterized in that~~ wherein the bulk mono-crystalline gallium-containing nitride [[layer]] crystallized on the seed has [[the]] a thickness of over 1 mm~~, preferably over 3mm~~.

11. (Currently Amended) The process according to claim [[1]] 19, ~~characterized in that~~ further comprising depositing a protective layer ~~is deposited~~ on the ~~thus obtained~~ substrate ~~by the crystallization method from the gaseous phase, preferably~~ using [[the]] a MOCVD or HVPE method.

12. (Currently Amended) The process according to claim [[1]] 11, ~~characterized in that a~~ wherein the protective layer ~~from~~ comprises $Al_xGa_{1-x}N$, where $0 \leq x < 1$ ~~, is deposited on the thus obtained substrate~~.

13-14. (Canceled)

15. (Currently Amended) The process according to claim [[1]] 20, ~~characterized in that~~ wherein the ~~process for~~ removing of impurities [[by]] involves

~~(d)~~ the (a) rinsing in the environment of supercritical ammonia-containing solvent, water or carbon dioxide, aided by an application of ultrasounds, or

~~(e)~~ the (b) rinsing in the environment of liquid ammonia-containing solvent, water or carbon dioxide, [[is]] aided by [[the]] an application of ultrasounds.

16. (Currently Amended) The process according to claim [[1]] 19, ~~characterized in that~~ wherein a wire saw is used for slicing the bulk mono-crystalline gallium-containing nitride.

17. (Canceled).

18. (New) A process of obtaining a mono-crystalline gallium-containing nitride with a supercritical solution formed by dissolving a gallium-containing feedstock in a supercritical ammonia-containing solvent with addition of a mineralizer, the process comprising:

forming a polycrystalline gallium-containing nitride feedstock in a reaction vessel, the reaction vessel comprising a dissolution zone in which a metallic gallium feedstock is placed and a crystallization zone in which at least one seed is placed,

wherein the polycrystalline gallium-containing nitride feedstock is formed from the metallic gallium feedstock by suppressing convection and chemical transport between the dissolution zone and the crystallization zone and by reacting the metallic gallium feedstock with a supercritical ammonia-containing solvent; and

crystallizing a gallium-containing nitride by gradual dissolution of the polycrystalline gallium-containing nitride feedstock by evoking convection and chemical transport and by selective crystallization of gallium-containing nitride on the at least one seed to obtain a bulk mono-crystalline gallium-containing nitride.

19. (New) A process of forming a substrate from a bulk mono-crystalline gallium-containing nitride, comprising:

obtaining a bulk mono-crystalline gallium-containing nitride by the process of claim 18; and

slicing and polishing the bulk mono-crystalline gallium-containing nitride to obtain a substrate.

20. (New) A process for removing impurities from a bulk mono-crystalline gallium-containing nitride, comprising:

obtaining a bulk mono-crystalline gallium-containing nitride by the process of claim 18, wherein the obtained bulk mono-crystalline gallium-containing nitride has a thickness of over 1 mm;

slicing the bulk mono-crystalline gallium-containing nitride into a wafer; and

removing at least some impurities from the wafer by:

(a) rinsing in an environment of supercritical ammonia-containing solvent, water or carbon dioxide; or

(b) rinsing in an environment of liquid ammonia-containing solvent, water or carbon dioxide; or

(c) subjecting to an action of gaseous hydrogen, nitrogen or ammonia.

21. (New) A process of obtaining a bulk mono-crystalline gallium-containing nitride from a supercritical solution formed by dissolving a gallium-containing feedstock in a supercritical ammonia-containing solvent with addition of a mineralizer, the process comprising:

forming a supercritical solution from a feedstock in a form of metallic gallium in a reaction vessel having a dissolution zone in which the feedstock in the form of metallic gallium and a feedstock in a form of crystalline gallium-containing nitride are placed and a crystallization zone in which at least one seed is placed, by suppressing convection and chemical transport between the dissolution zone and the crystallization zone and by dissolving the feedstock in the form of metallic gallium in a supercritical ammonia-containing solvent;

selectively crystallizing gallium-containing nitride on the feedstock in the form of crystalline gallium-containing nitride from the supercritical solution; and

crystallizing a gallium-containing nitride, through gradual dissolution of the feedstock in the form of crystalline gallium-containnig nitride, by evoking convection and chemical transport and by selective crystallization of gallium-containing nitride on the at least one seed in the crystallization zone to obtain a bulk mono-crystalline gallium-containing nitride.

22. (New) The process according to claim 18, wherein said convection and chemical transport are controlled through a temperature difference between the dissolution zone and the crystallization zone.

23. (New) The process according to claim 18, wherein the dissolution zone is above the crystallization zone.

24. (New) A process for reducing a level of impurities in a bulk mono-crystalline gallium-containing nitride obtained by the process according to claim 18, wherein the obtained bulk mono-crystalline gallium-containing nitride is subjected to annealing in an atmosphere of inert gas at a temperature between 600 °C and 1050 °C.

25. (New) The process according to claim 24, wherein said annealing is carried out in the atmosphere of inert gas with an addition of oxygen.

26. (New) The process according to claim 24, wherein the obtained bulk mono-crystalline gallium-containing nitride is doped with accepters, and said accepters are activated through said annealing.

27. (New) The process according to claim 18, wherein, during the crystallizing of the gallium-containing nitride from the polycrystalline gallium-containing nitride feedstock, a temperature of the selective crystallization of gallium-containing nitride on the at least one seed is higher than a temperature of the gradual dissolution of the polycrystalline gallium-containing nitride feedstock.

28. (New) The process according to claim 21, wherein, during the crystallizing of a gallium-containing nitride through gradual dissolution of the feedstock in the form of crystalline gallium-containing nitride, a temperature of the selective crystallization of gallium-containing nitride on the at least one seed is higher than a temperature of the dissolution of the feedstock in the form of crystalline gallium-containing nitride.